LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

PEARL RIVER

WATERBODY EVALUATION &
RECOMMENDATIONS

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational
Sportfish species such as largemouth bass are managed to maintain a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish to maintain angler interest and efforts.

Commercial
Commercial species are managed with statewide regulations to provide a maximum sustainable yield that does not contribute to declines in future population strength.

Species of Special Concern
Species of special concern are managed to protect the current population and to provide for a sustainable population.

EXISTING HARVEST REGULATIONS

Recreational Fishing Regulations
Statewide regulations are in effect for all fish species and may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

Commercial Fishing Regulations
Statewide regulations are in effect for all species. Commercial fishing regulations for 2013 may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

Louisiana Revised Statute RS 56:404 prohibits the use of seines, nets, or webbing in the Bogue Chitto River; logging and hand grabbing of fish in the Bogue Chitto River is also prohibited.

Species of Special Concern
Louisiana prohibited the take of all sturgeon in 1991. Critical habitat was established in the PRB for the Gulf sturgeon in 2003. It is also illegal in Louisiana to possess a threatened or endangered species.

SPECIES EVALUATION

Recreational

Largemouth Bass

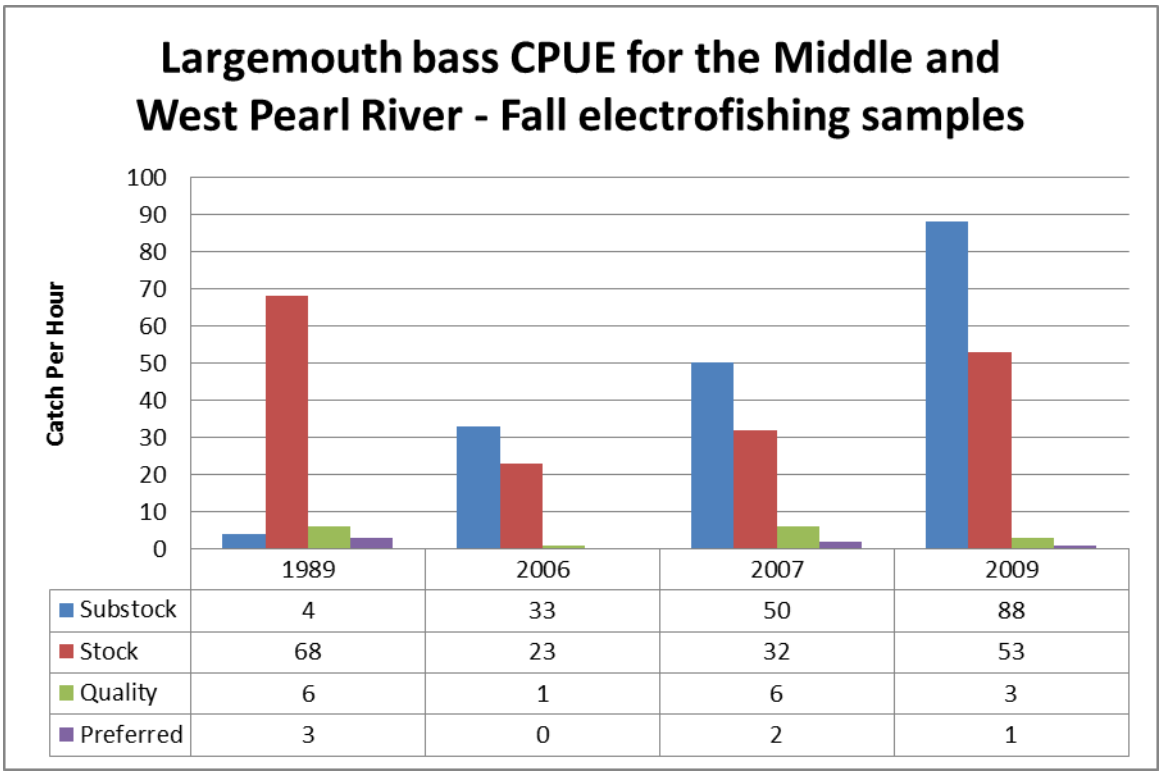
Largemouth bass are targeted for evaluation since they are a species indicative of the overall fish population due to their high position in the food chain. Electrofishing sampling is the

best indicator of largemouth bass abundance and size distribution, with the exception of large fish.

Largemouth bass catch per unit of effort and size structure-

Largemouth bass (LMB) occur throughout the PRB. However, the species is most abundant and most targeted by anglers in the lower portion of the river. The frequency and locations of LDWF's electrofishing samples in the basin have not been consistent over time and do not reflect a coordinated initiative to study the LMB population. Therefore, the following evaluation focuses on fall samples collected by LDWF in the Middle Pearl / West Middle Pearl River (LDEQ water body code 090207).

Electrofishing for LMB is conducted at 4 stations in the lower Pearl River system (Appendix I). This area is tidally influenced and salinities ranged from 0.1 parts per thousand (ppt) to 5.7 ppt during sampling efforts. Increased water levels and flow rates associated with spring flood pulses may adversely affect the efficiency of electrofishing efforts. Therefore, only data from fall electrofishing samples are considered in data analysis. Catch per unit of effort (CPUE) analyses by length category indicates a population dominated by individuals < 12 inches TL (Figure 1). These results appear to corroborate reports from anglers who have noted catches of large numbers of small fish. Mean total CPUE for years 1989 through 2009 may indicate a population decline and subsequent rebound following Hurricane Katrina (Figure 2).



	1989	2006	2007	2009
Substock	4	33	50	88
Stock	68	23	32	53
Quality	6	1	6	3
Preferred	3	0	2	1

Figure 1. The CPUE of substock-, (< 8 inches), stock- (8-12 inches), quality-, (12 - 15 inches) and preferred-size (15 - 20 inches) largemouth bass from the Middle and West Middle Pearl River, LA, for 1989, 2006, 2007 and 2009 fall electrofishing samples.

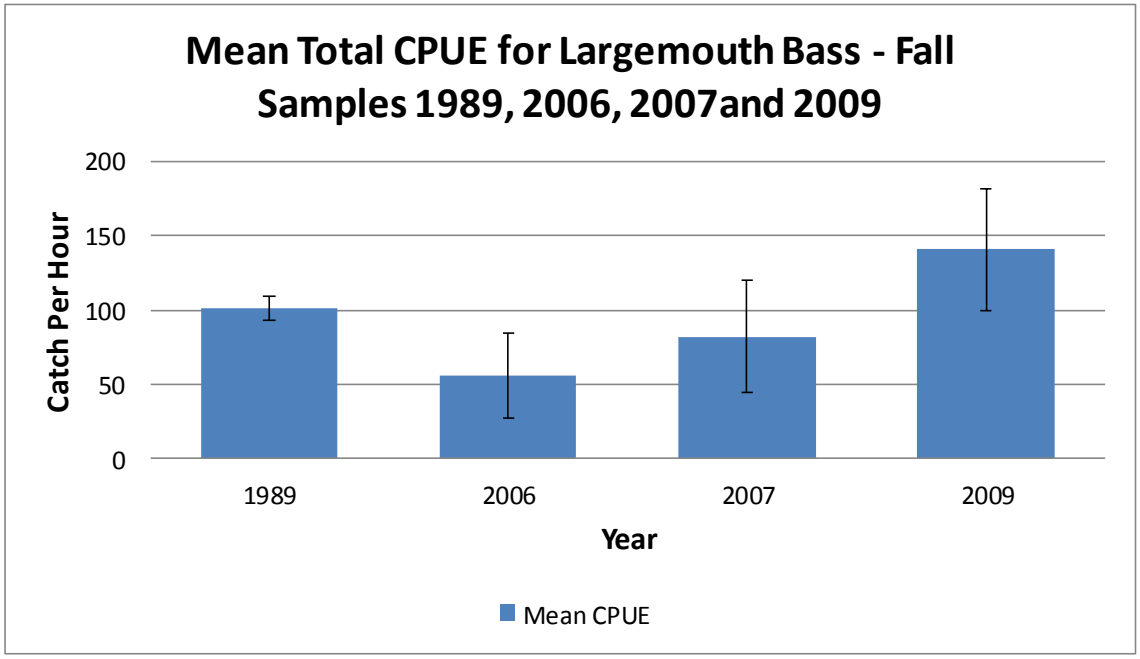


Figure 2. Mean total catch-per-unit-effort (+ SE) for largemouth bass collected in fall electrofishing samples for the Middle and West Middle Pearl River, LA, for the years 1989, 2006, 2007 and 2009.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe length-frequency data. Proportional stock density compares the number of fish of quality size (greater than 12 inches for largemouth bass) to the number of bass of stock-size (≥8 inches in length). The PSD is expressed as a percent. A fish population with a high PSD consists mainly of larger individuals, whereas a population with a low PSD consists mainly of smaller fish.

$$PSD = \frac{\text{Number of bass} \geq 12 \text{ inches}}{\text{Number of bass} \geq 8 \text{ inches}} \times 100$$

Relative stock density of preferred-size fish (RSD_P) is the proportion of largemouth bass in a stock (fish over 8 inches) that are 15 inches or longer.

$$RSD_P = \frac{\text{Number of bass} > 15 \text{ inches}}{\text{Number of bass} > 8 \text{ inches}} \times 100$$

Ideal PSD and RSD values for largemouth bass range from 40-70 and 10-40, respectively. Figure 4 below indicates that PSD and RSD_P values for the Pearl River are very low for all years sampled and likely due to the small numbers of largemouth bass in the data sets.

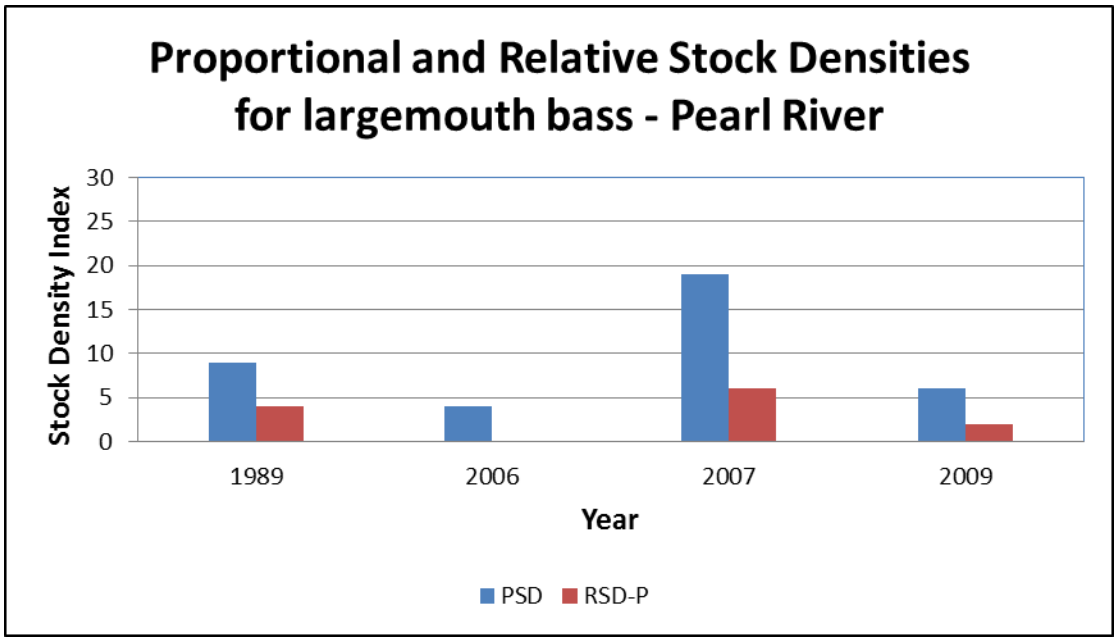


Figure 3. The PSD and RSD_P for largemouth bass collected in fall electrofishing samples from the Pearl River, LA for the years 1989, 2006, 2007 and 2009.

Forage

Forage availability can be measured indirectly by calculating fish body condition or relative weight. Relative weight (Wr) is a measure of fish "plumpness" and is the ratio of the fish weight to that of a determined standard weight for healthy fish. Largemouth bass Wr below 80 may indicate a potential problem with forage availability. Relative weights that are near or above 100 indicate a healthy bass population. Mean relative weight for stock size Pearl River bass ranged from 89.4 to 101.7. LMB of stock-size length category are in good condition and forage does not appear to be a limiting factor.

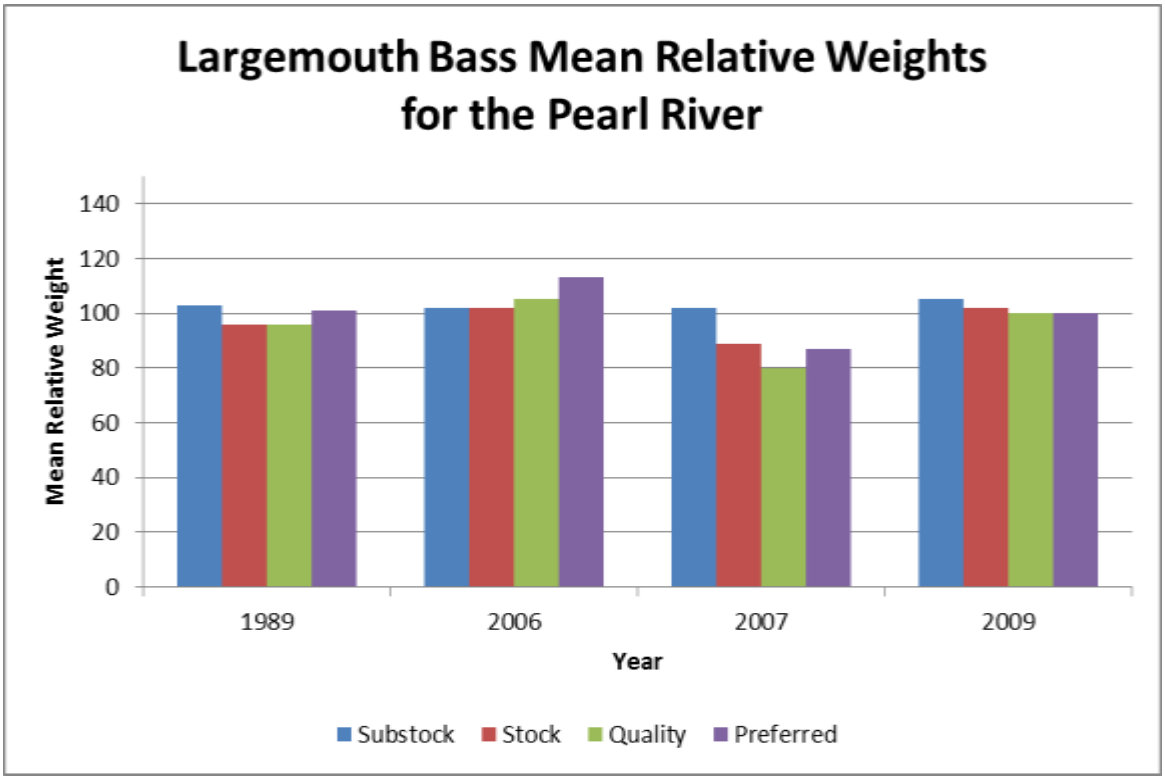


Figure 4. Mean relative weights for the various size classes of largemouth bass collected from the Pearl River for the years 1989, 2006, 2007 and 2009.

Crappie

Electrofishing is the not the most efficient sampling method for crappie. Lead nets are often used to determine the abundance and size structure of crappie populations. We have experimented with the placement and method of fishing lead nets to monitor the crappie population in the PRB. However, no sound method for crappie sampling within the river has been determined.

Commercial

The PRB supports a small commercial fishery for catfishes and alligator gar (*Atractosteus spatula*).

Species of Special Concern

The PRB is home to the highest concentration of aquatic species of conservation concern in Louisiana (LDWF 2005). A complete listing can be found in the Pearl River MP-A. Anthropogenic activities within the floodplain have been attributed to the decline of many of these species. Of particular note, the Pearl darter (*Percina aurora*) is now considered extirpated from the river in both LA and MS (Ross (2001). Furthermore, recent surveys in LA have been unable to document the presence of the inflated heelsplitter mussel (*Potamilus inflatus*) or Alabama shad (*Alosa alabamae).* In LA, the Gulf sturgeon (*Acipenser oxyrinchus desotoi*) can be found in the Pearl and Pontchartrain Basins. It is listed as

threatened by USFWS and has been protected in LA since 1991. Dr. Ken Sulak with USGS has provided a post Hurricane Katrina population estimate for Gulf sturgeon in the PRB. He estimated approximately 100-200 individuals based on over 15 years of data collected by LDWF and USFWS. In August of 2011, 28 Gulf sturgeons were found dead as the result of a point source pollution fish kill in the Pearl River.

HABITAT EVALUATION

Aquatic Vegetation

LDWF has not conducted a formal survey of aquatic vegetation in the PRB. Although slowly declining; aquatic species diversity within the PRB is high relative to all rivers in the state. This is indicative a productive system with complex habitats for a wide variety of species. Common salvinia and water hyacinth are the primary nuisance plants in the system. The plants accumulate in back water areas and oxbows. The current Pearl River Aquatic Vegetation Management Plan (AVMP) estimates approximately 450 acres of common salvinia and 300 acres of water hyacinth throughout the system.

Substrate

Variable proportions of sand, silt, clay, small to medium gravel, and accumulated woody debris occur in all streams of the basin.

Artificial Structure

Small boat docks or piers and rip rap protected shorelines are sparsely located throughout the basin.

CONDITION IMBALANCE / PROBLEM

Low head dams on the Pearl and Bogue Chitto rivers limit the movement of fishes and the distribution of mussels within the basin. The dams are also suspected of altering the spawning migration of Gulf sturgeon and Alabama shad, two anadromous species. These dams also restrict boating access and pose grave danger to boaters.

The 2004 Water Quality Inventory Report (LDEQ 2009) indicated that 78% of the 23 waterbody sub-segments in the PRB were not supporting their designated use for fish and wildlife propagation. The suspected causes for these water quality problems include: metals, nutrients, fecal coliform bacteria, organic enrichment and low concentrations of dissolved oxygen. Fish consumption advisories for mercury are in place for the Pearl and Bogue Chitto Rivers in Louisiana.

The headwater dam (Ross Barnett Reservoir) at Jackson, MS has changed normal flow patterns in the lower Pearl Basin. Proposed reservoirs south of Jackson could compound the interruption of normal flow patterns in portions (LDWF 2005).

CORRECTIVE ACTION NEEDED

1. The Pearl and Bogue Chitto River sills should be removed to restore historic fish passage and migration routes, allow movement of potamodromous fish species, and restore boater access

2. A safer means of waste disposal for the Bogalusa paper mill should be investigated

3. Proposals for projects that could alter the hydrology of the PRB should be closely scrutinized

RECOMMENDATIONS

1. Coordinate with applicable government agencies and non-governmental organizations to develop a comprehensive management strategy for the Pearl River Basin

2. Continue treating nuisance vegetation with herbicide applications

3. Continue standardized fish and freshwater mussel population sampling
    a. Develop guidelines to ensure that sampling efforts are standardized with regard to water flow rates
    b. Investigate random sample site selection to increase the precision of catch rate indices

4. Continue the use of existing recreational harvest regulations until LDWF sampling results indicate that change is necessary from a biological perspective or such time as a change in management strategy is indicated by the collective opinion of area anglers

Literature Cited

LDWF 2005. Louisiana Comprehensive Wildlife Conservation Strategy. Louisiana Department of Wildlife and Fisheries. Baton Rouge. 455 pp.

Ross, Stephen T., et al. 2001. Inland Fishes of Mississippi. Mississippi Department of Wildlife, Fisheries and Parks.

APPENDIX I

Figure 1. Electrofishing stations for the Middle Pearl River and West Middle Pearl River, Louisiana (waterbody code
090207)